



# GUIDELINES

## **GUIDELINE F.05-AUTOMATIC FIRE SPRINKLER REQUIREMENTS**

### **F.05.1 PURPOSE**

The purpose of this guideline is to provide information and requirements for the design and installation of the aboveground portion of fire sprinkler systems in accordance with the provisions of the California Fire Code (CFC), California Building Code (CBC), 2002 NFPA 24, 2002 NFPA 13, 2002 NFPA 13R, and locally adopted amendments to these codes.

### **F.05.2 SCOPE**

This guideline shall apply to the aboveground portion of fire sprinkler systems. For the underground portion, see Guideline F.04.

### **F.05.3 PROCEDURE**

#### **PLAN SUBMITTAL AND PERMITS**

- Two sets of fire sprinkler plans, cut sheets, and calculations shall be submitted to the Newport Beach Building Department.
- Minimum size of plan is 18" x 24".
- Plans shall be legible, scaled to nationally recognized standards, and printed as blue line or black line drawing. Pen and ink plans or pen and ink changes to blue line plans are not allowed.
- A current flow test data report (dated within six months) shall accompany the plans. Contact the City of Newport Beach Utilities Department at (949) 644-3011 to schedule.
- The Architect or Engineer of Record shall review the sprinkler plans to assure coordination with other trades and building elements. Consideration should be given to: lights, interior design, plumbing, ductwork, structural methods or attachment for sprinkler piping, and loads/impacts on structural components. The engineer/architect's stamp is required to be on the plans in order to receive approval.



# GUIDELINES

## TITLE PAGE REQUIREMENTS

- List the applicable codes and standards used for the system design.
- List the project location including the full legal address of the facility, and building number(s), if any.
- The name of the system designer, telephone number, address, and California contractor's license number and classification or PE license number. Designers must possess a C16, C34, or C36 license, or be a Registered Professional Engineer (RPE).

## ADDITIONAL REQUIRED INFORMATION (All sections in ( ) are from NFPA 13, 2002 Ed)

### 1. Specify type of sprinkler system. (3.4)

- ☐ Wet pipe
- ☐ Dry pipe
- ☐ Pre-action
- ☐ Circulating closed loop
- ☐ Deluge
- ☐ Anti-freeze
- ☐ Combined dry pipe and pre-action
- ☐ Combined Standpipe/Sprinkler System
- ☐ Gridded
- ☐ Looped

### 2. Specify the occupancy classification per section 5-1 and area per sprinkler. (11.2.3.1.5)

- ☐ Light hazard
- ☐ Ordinary hazard Group I
- ☐ Ordinary hazard Group II
- ☐ Extra hazard Group I
- ☐ Extra hazard Group II
- ☐ High piled stock

### 3. Specify if the construction is obstructed or unobstructed. (3.7)

- ☐ Smooth ceiling
- ☐ Beam and Girder
- ☐ Bar joist
- ☐ Wood joist
- ☐ Wood Truss Construction



# GUIDELINES

4. Provide fire hydrant flow test data. Incorporate the water-flow test data into your design. The maximum design pressure is 90% of the static pressure when the static does not exceed 100 psi or percentage of the fire sprinkler water availability reduction (graph in Guideline F.02).
5. Provide a riser detail (elevation view).
6. Specify the clearance around the riser and all pipes penetrating rigid walls and floors.
  - 2" for pipes  $\leq 3 \frac{1}{2}$ " and 4" for pipes  $\geq 4$ ", provide caulking for mains and cross main. (9.3.4)
7. Provide and indicate the location of a system drain. (Table 8.15.2.4.2)
8. Provide a test drain valve downstream of the water-flow switch.
9. Provide a flow switch and local water flow alarm for every system. (CFC 903.4.2)
10. The water-flow alarm shall be monitored in all systems. (See exceptions in CFC 903.4)
  - Provide a note on the plans regarding monitoring.
11. Provide a pressure gauge on riser near the system main drain. (8.16.3.1)
12. Specify the type of overhead pipe to be used. (Table 6.3.1.1)
13. Specify type of overhead pipe fittings to be used. (Tables 6.4.1 and 6.4.3)
14. Flexible coupling should be installed for pipes with sections greater than  $2 \frac{1}{2}$ "  $\phi$  at the following locations: (9.3.2)
  - a. Within 24" from top and bottom of risers.
  - b. Within 12" above and within 24" below the floor in multi-story buildings.
  - c. On both sides of concrete walls within 1' of the wall surface.
  - d. Within 24" of building expansion joints.
  - e. Within 24" of the top and bottom of drops to hose lines and mezzanines.
  - f. Within 24" of top of drops exceeding 15 ft. supplying more than one sprinkler.
  - g. Above and below any intermediate points of support for a riser or any vertical pipe.



# GUIDELINES

15. If hangers are designed for the system's main piping, they should support 5 times the weight of the water filled pipe plus 250 pounds. (9.1.1.2). Hangers selected from tables shall support the weight of water filled pipe plus 250 pounds. Provide hanger listings and details.
16. Show location of the riser supports. Anchor at top and bottom and at 25' in between, and at each section of pipe. (9.2.5.1)
17. Spacing of pipe hangers to be per Table 9.2.2.1. Provide Table 9.2.2.1 on plan.
18. Maximum cantilevered pipe with end sprinkler is:
  - 3' for 1" @ pipe,
  - 4' for 1 1/4" @ pipe and
  - 5' for 1 1/2" @ pipe. (9.2.3.4.1)
19. The maximum length of unsupported arm over pipe to a sprinkler is:
  - 2' for steel pipe,
  - 1' for copper pipe. (9.2.3.5.1)
20. Indicate type of vertical and lateral restraint provided for branch lines. (9.3.6)
21. Design longitudinal and lateral bracing per 9.3.5.
22. Longitudinal bracing shall be spaced at a maximum of 80 feet. (9.3.5.4.1)
23. Provide a four way brace at the top of all risers. (9.3.5.5)
24. Lateral bracing shall be spaced for main and cross main at a maximum of 40 feet. (9.3.5.3.1)
  - Exception #2 for 6 inch rods
  - Exception #3 for U-hooks
25. Provide specs and completed NFPA standard bracing form on plans for sway bracing. (Fig. A-9.3.5(a))
26. Provide the manufacturer's specification sheet on plans for all sprinklers used.
27. Provide the sprinkler identification number (SIN) on the plans for all sprinklers used.
28. Specify the sprinkler head and listing.



# GUIDELINES

29. Dry preaction systems require upright sprinkler heads or pendant heads listed for dry use.
30. Specify quick response sprinkler heads for new light hazard occupancies.
31. Sprinklers are to be spaced as per Table 8.6.2.2.1(a), (b), (c) The minimum distance between sprinklers is 6 feet. (8.6.3.4)
32. Sprinklers in concealed attic spaces shall be of intermediate temperature classification. (8.3.2.5 (5))
33. Sprinklers under glass or plastic skylights exposed to the direct rays of the sun shall be of the intermediate temperature classification. (8.3.2.5 (4))
34. Sprinkler heads shall be no less than \_\_\_\_\_ \* ft. from walls and not more than 9' from walls in small rooms (800 ft<sup>2</sup>). (8.6.3.2.1 Min. distance to wall 4". 8.6.3.3) \* See FD for distance.
35. Sprinklers adjoining ceiling mounted obstructions must comply with Tables 8.6.5.1.2 and 8.6.5.2.2 for floor mounted obstructions.
36. Sprinkler deflectors are to be parallel to sloped ceilings. (8.6.4.2)
37. The minimum clearance below sprinkler is 18". (8.6.5.2.1.1)
38. Sprinklers not required in kitchen exhaust duct and hood if a UL300 kitchen fire suppression system is provided.
39. A side wall sprinkler head is required at 2' (max) above the floor of hydraulic elevator pits. (8.14.5.1)
40. Additional required notes on the drawings:
  - a. Pipe welding to be done by a certified welder.
  - b. The welded pipe to be inspected by City inspector prior to hanging.
  - c. All welds to be stamped by the welder.
  - d. A copy of welder's certificate shall be available to the inspector at the time of the inspection.
  - e. Each pipe segment on branch line to have one hanger minimum (6-2.3.1). The maximum distance between hangers shall also not exceed Table 9-2.2.1.



# GUIDELINES

- f. Hangers for mains shall be in accordance with Table 9.2.2.1 or between each branch line, whichever is the lesser dimension. (9.2.4.1)”
- g. Provide spare sprinklers as follows:

<u>System Size</u>	<u># of Spare Sprinklers</u>
0 – 300	6
300 – 1000	12
- h. Sprinkler deflector to be 1" to 12" below smooth ceiling (1" to 6" below structural members; 22" max. below deck for obstructed condition). (8.6.4.1.1.1 and 8.6.4.1.2 (1))
- i. Contractor shall provide to Fire Department a completed Contractor’s Material and Test Certificate for Aboveground Piping, at time of final inspection in accordance with Chapter 10 of NFPA 13, 2002 Edition.